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What is claimed is:

1. An integrated circuit card for use with a terminal, comprising:

a communicator configured to communicate with the terminal;

a memory storing:

an application having a high level programming language format, and

an interpreter; and

a processor coupled to the memory, the processor configured to use the interpreter to interpret the application for execution and to use the communicator to communicate with the terminal.

2. The integrated circuit card of claim 1, wherein the high level programming language format comprises a class file format.

3. The integrated circuit card of claim 1 wherein the processor comprises a microcontroller.

4. The integrated circuit card of claim 1 wherein at least a portion of the memory is located in the processor.

5. The integrated circuit card of claim 1 wherein the high level programming language format comprises a Java programming language format.

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6. The integrated circuit card of ~~claim 1, wherein~~ the application ~~has~~ been processed from a second application having a string of characters, and the string of characters is represented in the first application by an identifier.

7. The integrated circuit card of claim 6, wherein the identifier comprises an integer.

8. The integrated circuit card of claim 1 wherein the processor is further configured to:

receive a request from a requester to access an element of the card;

after receipt of the request, interact with the requester to authenticate an identity of the requester; and

based on the identity, selectively grant access to the element.

9. The integrated circuit card of claim 8, wherein the requester comprises the processor.

10. The integrated circuit card of claim 8, wherein the requester comprises the terminal.

11. The integrated circuit card of claim 8, wherein the element comprises the application stored in the memory, and

once access is allowed, the requester is configured to use the application.

12. The integrated circuit card of claim 8, wherein the element comprises another application stored in the memory.

13. The integrated circuit card of claim 8, wherein the element includes data stored in the memory.

14. The integrated circuit card of claim 8 wherein the element comprises the communicator.

15. The integrated circuit card of claim 8, wherein the memory also stores an access control list for the element, the access control list furnishing an indication of types of access to be granted to the identity, the processor further configured to:

based on the access control list, selectively grant specific types of access to the requester.

16. The integrated circuit card of claim 15 wherein the types of access include reading data.

17. The integrated circuit card of claim 15 wherein the types of access include writing data.

18. The integrated circuit card of claim 15 wherein the types of access include appending data.

19. The integrated circuit card of claim 15 wherein the types of access include creating data.

20. The integrated circuit card of claim 15 wherein the types of access include deleting data.

21. The integrated circuit card of claim 15 wherein the types of access include executing an application.

22. The integrated circuit card of claim 1, wherein the application is one of a plurality of applications stored in the memory, the processor is further configured to:

receive a request from a requester to access one of the plurality of applications;

after receipt of the request, determine whether said one of the plurality of applications complies with a predetermined set of rules; and

based on the determination, selectively grant access to the requester to said one of the plurality of applications.

23. The integrated circuit card of claim 22, wherein the predetermined rules provide a guide for determining whether said one of the plurality of applications accesses a predetermined region of the memory.

24. The integrated circuit card of claim 22, wherein the processor is further configured to:

authenticate an identity of the requester; and

grant access to said one of the plurality of applications based on the identity.

25. The integrated circuit card of claim 1, wherein the processor is further configured to:

interact with the terminal via the communicator to authenticate an identity; and

determine if the identity has been authenticated; and

based on the determination, selectively allow communication between the terminal and the integrated circuit card.

26. The integrated circuit card of claim 25, wherein the communicator and the terminal communicate via communication channels, the processor further configured to assign one of the communication channels to the identity when the processor allows the communication between the terminal and the integrated circuit card.

27. The integrated circuit card of claim 26, wherein the processor is further configured to:

assign a session key to said one of the communication channels, and

use the session key when the processor and the terminal communicate via said one of the communication channels.

28. The integrated circuit card of claim 1, wherein the terminal has a card reader and the communicator comprises a contact for communicating with the card reader.

Sub C2 29. The integrated circuit card of claim 1, ~~wherein~~ the terminal has a ~~wireless~~ communication device and the communictor ~~a wireless~~ transceiver for communicating with the ~~wireless~~ communication device.

30. The integrated circuit card of claim 1, wherein the terminal has a wireless communication device and the communicator comprises a wireless transmitter for communicating with the wireless communication device.

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31. A method for use with an integrated circuit card and a terminal, comprising:

storing an interpreter and an application having a high level programming language format in a memory of the integrated circuit card; and

using a processor of the integrated circuit card to use the interpreter to interpret the application for execution; and

using a communicator of the card when communicating between the processor and the terminal.

32. The method of claim 31, wherein the high level programming language format comprises a class file format.

33. The method of claim 31, wherein the processor comprises a microcontroller.

34. The method of claim 31, wherein at least a portion of the memory is located in the processor.

35. The method of claim 31, wherein the high level programming language format comprises a Java programming language format.

36. The method of claim 1, wherein

the application has been processed from a second application having a string of characters, further comprising:

representing the string of characters in the first application by an identifier.

37. The method of claim 36, wherein the identifier includes an integer.

38. The method of claim 31, further comprising:

receiving a request from a requester to access an element of the card;

after receipt of the request, interacting with the requester to authenticate an identity of the requester; and

based on the identity, selectively granting access to the element.

39. The method of claim 38, wherein the requester comprises the processor.

40. The method of claim 38, wherein the requester comprises the terminal.

41. The method of claim 38, wherein the element comprises the application stored in the memory, further comprising:

once access is allowed, using the application with the requester.

42. The method of claim 38, wherein the element comprises another application stored in the memory.

43. The method of claim 38, wherein the element includes data stored in the memory.

44. The method of claim 38, wherein the element comprises the communicator.

45. The method of claim 38, wherein the memory also stores an access control list for the element, the access control list furnishing an indication of types of access to be granted to the identity, further comprising:

based on the access control list, using the processor to selectively grant specific types of access to the requester.

46. The method of claim 45, wherein the types of access include reading data.

47. The method of claim 45, wherein the types of access include writing data.

48. The method of claim 45, wherein the types of access include appending data.

49. The method of claim 45, wherein the types of access include creating data.

50. The method of claim 45, wherein the types of access include deleting data.

51. The method of claim 45, wherein the types of access including executing an application.

52. The method of claim 31, wherein the application is one of a plurality of applications stored in the memory, further comprising:

receiving a request from a requester to access one of the applications stored in the memory;

upon receipt of the request, determining whether said one of the plurality of applications complies with a predetermined set of rules; and

based on the determining, selectively granting access to the said one of the plurality of applications.

53. The method of claim 52, wherein the predetermined rules provide a guide for determining whether said one of the plurality of applications accesses a predetermined region of the memory.

54. The method of claim 52, further comprising:

authenticating an indentity of the requester; and

based on the indentity, granting access to said one of the plurality of applications.

55. The method of claim 31, further comprising:

communicating with the terminal to authenticate an identity;

determining if the identity has been authenticated; and

based on the determining, selectively allowing communication between the terminal and the integrated circuit card.

56. The method of claim 55, further comprising:

communicating between the terminal and the processor via communication channels; and

assigning one of the communication channels to the identity when the allowing allows communication between the card reader and the integrated circuit card.

57. The method of claim 56, further comprising:

assigning a session key to said one of the communication channels; and

using the session key when the processor and the terminal communicate via said one of the communication channels.

58. A smart card comprising:

a memory storing a Java interpreter; and

a processor configured to use the interpreter to interpret a Java application for execution.

59. A microcontroller comprising:

a semiconductor substrate;

a memory located in the substrate;

a programming language interpreter stored in the memory and configured to implement security checks; and

a central processing unit located in the substrate and coupled to the memory.

60. The microcontroller of claim 59, wherein the interpreter comprises a Java byte code interpreter.

61. The microcontroller of claim 59, wherein the security checks comprise establishing firewalls.

62. The microcontroller of claim 59, wherein the security checks comprise enforcing a sandbox security model.

63. A smart card comprising:

a memory;

a programming language interpreter stored in the memory and configured to implement security checks; and

a central processing unit coupled to the memory.

64. The smart card of claim 63, wherein the interpreter comprises a Java byte code interpreter.

65. The smart card of claim 63, wherein the security checks comprise establishing firewalls.

66. The smart card of claim 63, wherein the security checks comprise enforcing a sandbox security model.

67. An integrated circuit card for use with a terminal, comprising:

a communicator;

a memory storing an interpreter and first instructions of a first application, the first instructions having been converted from second instructions of a second application; and

a processor coupled to the memory and configured to use the interpreter to execute the first instructions and to communicate with the terminal via the communicator.

68. The integrated circuit card of claim 67, wherein the first application has a class file format.

69. The integrated circuit card of claim 67, wherein the second application has a class file format.

70. The integrated circuit card of claim 67, wherein the first instructions comprise byte codes.

71. The integrated circuit card of claim 67, wherein the second instructions comprise byte codes.

72. The integrated circuit card of claim 67, wherein the first instructions comprise Java byte codes.

73. The integrated circuit card of claim 67, wherein the second instructions comprise Java byte codes.

74. The integrated circuit card of claim 67, wherein the first instructions comprise generalized versions of the second instructions.

75. The integrated circuit card of claim 67, wherein the first instructions comprise renumbered versions of the second instructions.

76. The integrated circuit card of claim 67, wherein

the second instructions include constant references, and

the first instructions include constants that replace the constant references of the second instructions.

77. The integrated circuit card of claim 67, wherein

the second instructions include references, the references shifting location during the conversion of the second instructions to the first instructions, and

the first instructions are relinked to the references after the shifting.

78. The integrated circuit card of claim 67, wherein

the first instructions comprise byte codes for a first type of virtual machine, and

the second instructions comprise byte codes for a second type of virtual machine, the first type being different from the second type.

79. A method for use with an integrated circuit card, comprising:

converting second instructions of a second application to first instructions of a first application;

storing the first instructions in a memory of the integrated circuit card; and

using an interpreter of the integrated circuit card to execute the first instructions.

80. The method of claim 79, wherein the first application has a class file format.

81. The method of claim 79, wherein the second application has a class file format.

82. The method of claim 79, wherein the first instructions comprise byte codes.

83. The method of claim 79, wherein the second instructions comprise byte codes.

84. The method of claim 79, wherein the first instructions comprise Java byte codes.

85. The method of claim 79, wherein the second instructions comprise Java byte codes.

86. The method of claim 79, wherein the first instructions are generalized versions of the second instructions.

87. The method of claim 79, wherein the converting includes renumbering the second instructions to form first instructions.

88. The method of claim 79, wherein the second instructions include constant references, and

the converting includes replacing the constant references of the second instructions with constants.

89. The method of claim 79, wherein the second instructions include references and the converting includes shifting location of the references, further comprising:

relinking the first instructions to the references after the converting.

90. The method of claim 79, wherein

the first instructions comprise byte codes for a first type of virtual machine, and

the second instructions comprise byte codes for a second type of virtual machine, the first type being different from the second type.

91. An integrated circuit for use with a terminal, comprising:

a communicator configured to communicate with the terminal;

a memory storing a first application that has been processed from a second application having a string of characters, the string of characters being represented in the first application by an identifier; and

a processor coupled to the memory, the processor configured to use the interpreter to interpret the first application for execution and to use the communicator to communicate with the terminal.

92. The integrated circuit card of claim 91, wherein the identifier comprises an integer.

93. A method for use with an integrated circuit card and a terminal comprising:

processing a second application to create a first application, the second application having a string of characters;

representing the string of characters of the first application by an identifier in the second application;

storing an interpreter and the first application in a memory of the integrated circuit card; and

using a processor of the integrated circuit card to use an interpreter to interpret the first application for execution.

94. The method of claim 93, wherein the indentifier includes an integer.

95. A microcontroller comprising:

a memory storing:

an application having a class file format, and

an interpreter; and

a processor coupled to the memory, the processor configured to use the interpreter to interpret the application for execution.

96. The microcontroller of claim 95, further comprising:

a communicator configured to communicate with a terminal.

97. The microcontroller of claim 96, wherein the terminal has a card reader and the communicator comprises a contact for communicating with the card reader.

98. The microcontroller of claim 96, wherein the terminal has a wireless communication device and the communictor a wireless transceiver for communicating with the wireless communication device.

99. The microcontroller of claim 96, wherein the terminal has a wireless communication device and the communicator comprises a wireless transmitter for communicating with the wireless communication device.

100. The microcontroller of claim 95, wherein the class file format comprises a Java class file format.

101. A method for use with an integrated circuit card, comprising:

storing a first application in a memory of the integrated circuit card;

storing a second application in the memory of the integrated circuit card; and

creating a firewall that isolates the first and second applications so that the second application cannot access either the first application or data associated with the first application.

102. The method of claim 101, wherein the first and second applications comprise Java byte codes.

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103. The method of claim 100, wherein the creating includes using a Java interpreter.

104. The method of claim 101, wherein

the storing of the first application is performed in association with manufacture of the integrated circuit card; and

the storing of the second application is performed at a later time after the manufacture is completed.

105. An integrated circuit card for use with a terminal, comprising:

a communicator configured to communicate with the terminal;

a memory storing:

applications, each application having a high level programming language format, and

an interpreter; and

a processor coupled to the memory, the processor configured to:

a.) use the interpreter to interpret the applications for execution,

b.) use the interpreter to create a firewall to isolate the applications from each other, and

c.) use the communicator to communicate with the terminal.

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